

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	0009-151	1	18
Plotting Date: 05/17/2021			

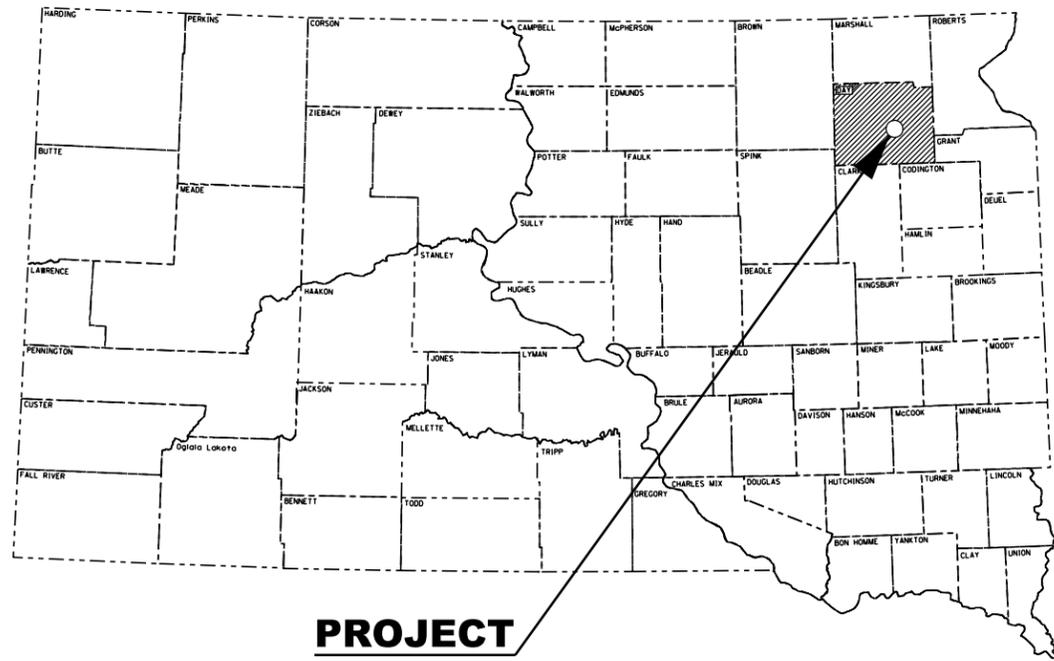
STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT 0009-151
MAINTENANCE YARD
DAY COUNTY
GRADING, RESURFACING, CURB & GUTTER,
VALLEY GUTTER AND STORM SEWER
PCN I6AG

Index of Sheets

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- Sheet: 2-3 Estimate of Quantities and Environmental Commitments
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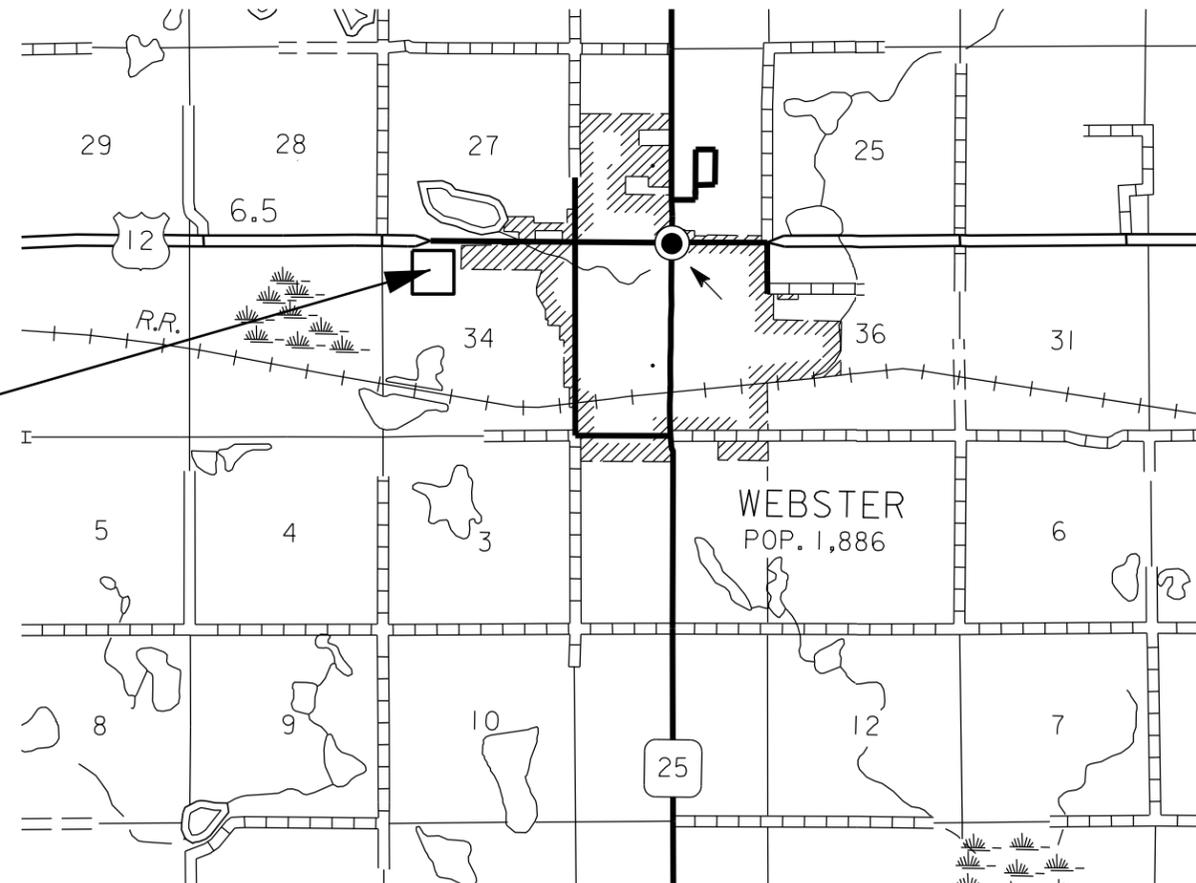
PLOT SCALE - 1" = 1000'



PROJECT

R 56 W

WORK AREA



T 122 N



STORM WATER PERMIT
(None Required)

PLOTTED FROM - TRAB18004

PLOT NAME - 1
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ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3200	Construction Staking	Lump Sum	LS
110E0605	Remove Chain Link Fence	40	Ft
110E1010	Remove Asphalt Concrete Pavement	9,052.0	SqYd
120E0010	Unclassified Excavation	5,691	CuYd
260E1010	Base Course	9,136.3	Ton
320E1200	Asphalt Concrete Composite	3,181.2	Ton
450E5211	18" CMP Flared End, Furnish	1	Each
450E5212	18" CMP Flared End, Install	1	Each
450E7019	18" High Density Polyethylene Pipe, Furnish	540	Ft
450E7020	18" High Density Polyethylene Pipe, Install	540	Ft
462E0100	Class M6 Concrete	4.1	CuYd
480E0100	Reinforcing Steel	689	Lb
621E0520	Reset Chain Link Fence	40	Ft
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
650E0060	Type B66 Concrete Curb and Gutter	391	Ft
650E6080	8" Concrete Valley Gutter	148	Ft
670E2200	Type C Frame and Grate	3	Each
671E7010	Adjust Manhole	1	Each
720E1015	Bank and Channel Protection Gabion	9.0	CuYd
734E0010	Erosion Control	Lump Sum	LS
734E0154	12" Diameter Erosion Control Wattle	80	Ft
831E0110	Type B Drainage Fabric	30	SqYd
831E0300	Reinforcement Fabric (MSE)	16,677	SqYd

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

ENVIRONMENTAL COMMITMENTS

The SDDOT is committed to protecting the environment and uses Environmental Commitments as a communication tool for the Engineer and Contractor to ensure that attention is given to avoid, minimize, and/or mitigate an environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency with permitting authority can delay a project if identified environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. During

construction, the Project Engineer will verify that the Contractor has met Environmental Commitment requirements. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office.

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: <https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf>

For questions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the Environmental Engineer at 605-773-3180 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

Once construction is complete, the Project Engineer will review all environmental commitments for the project and document their completion.

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B2: WHOOPING CRANE

The Whooping Crane is a spring and fall migratory bird in South Dakota that is about 5 feet tall and typically stops on wetlands, rivers, and agricultural lands along their migration route. An adult Whooping Crane is white with a red crown and a long, dark, pointed bill. Immature Whooping Cranes are cinnamon brown. While in flight, their long necks are kept straight and their long dark legs trail behind. Adult Whooping Cranes' black wing tips are visible during flight.

Action Taken/Required:

Harassment or other measures to cause the Whooping Crane to leave the site is a violation of the Endangered Species Act. If a Whooping Crane is sighted roosting in the vicinity of the project, borrow pits, or staging areas associated with the project, cease construction activities in the affected area until the Whooping Crane departs and immediately contact the Project Engineer. The Project Engineer will contact the Environmental Office so that the sighting can be reported to USFWS.

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site.

ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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COMMITMENT H: WASTE DISPOSAL SITE

The Contractor will furnish a site(s) for the disposal of construction and/or demolition debris generated by this project.

Action Taken/Required:

Construction and/or demolition debris may not be disposed of within the Public ROW.

The waste disposal site(s) will be managed and reclaimed in accordance with the following from the General Permit for Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Environment and Natural Resources.

The waste disposal site(s) will not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Environmental Office and the Project Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements will apply:

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench completely separate from wood debris. The final cover over the construction and/or demolition debris will consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW will be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor will control the access to waste disposal sites not within the Public ROW with fences, gates, and placement of a sign or signs at the entrance to the site stating "No Dumping Allowed".
2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste will be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) will be incidental to the various contract items.

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

State Historic Preservation Office (SHPO or THPO) concurrence has not been obtained for this project.

Action Taken/Required:

All earth disturbing activities not designated within the plans require a cultural resource review prior to scheduling the pre-construction meeting. This work includes, but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

The Contractor will arrange and pay for a record search and when necessary, a cultural resource survey. The Contractor has the option to contact the state Archaeological Research Center (ARC) at 605-394-1936 or another qualified archaeologist, to obtain either a records search or a cultural resources survey. A record search might be sufficient for review if the site was previously surveyed; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor will provide ARC with the following: a topographical map or aerial view of which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that artifacts have not been found on the site.

The Contractor will submit the cultural resources survey report to SDDOT Environmental Office, 700 East Broadway Avenue, Pierre, SD 57501-2586. SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office to determine an appropriate course of action.

The Contractor is responsible for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor will not utilize a site known or suspected of having contaminated soil or water. The Contractor will provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

SURFACING THICKNESS DIMENSIONS

Plans tonnage will be applied even though the thickness may vary from that shown on the plans.

At those locations where material must be placed to achieve a required elevation, plans tonnage may be varied to achieve the required elevation.

SEQUENCE OF OPERATIONS

The Contractor will coordinate their activities with the SDDOT Webster Maintenance personnel to minimize the disruption of the Owner's use of the yard, fuel pumps and shop areas.

The Contractor will contact the Webster Maintenance Forces on site (605-345-3232) a minimum of 48 hours prior to beginning excavation so that access to the building and yard can be arranged.

TRAFFIC CONTROL

The Contractor will coordinate with the DOT maintenance personnel to provide access to the facilities for day to day operations.

The Contractor will be responsible to provide and install any traffic control devices necessary to keep the public from entering the work zone. TRUCK CROSSING signs will be placed on US Highway 12 in both directions and located a minimum of 550' in advance of the entrance to the Webster maintenance shop.

The TRUCK CROSSING signs, 48' x 48", will be displayed at all times when haul vehicles are hauling material to and from the site. During non-working hours, the signs will be covered or removed from view.

Payment for furnishing and installing all traffic control devices, including signs, will be incidental to the Lump Sum price for TRAFFIC CONTROL, MISCELLANEOUS.

Work activities during non-daylight hours will not be allowed without prior approval from the Engineer.

UTILITIES

Utilities are not planned to be affected on this project. If utilities are identified near the improvement are through the SD One Call Process as required by South Dakota Codified Law 49-7A and Administrative Rule Article 20:25, the Contractor will notify the Engineer to determine modifications that will be necessary to avoid utility impacts.

The Contractor will notify the Engineer prior to work to allow the SDDOT to locate private utilities in the work area.

UNCLASSIFIED EXCAVATION

When plan quantities are used for payment, the Unclassified Excavation quantity will be used for final payment and the plans quantity for the items listed in the Table of Unclassified Excavation will not be adjusted according to field measurements.

It is not anticipated that the Contractor will encounter any unstable excavation areas that contain saturated or weak compressible soils and other organic materials. However, in the event that such a site is encountered, the depth of excavation will be adjusted by the Engineer to ensure a solid foundation free of organic, soft and incompressible earthen material is removed. All costs associated with removing the material will be incidental to the contract unit price per cubic yard for UNCLASSIFIED EXCAVATION.

Stable and incompressible excavation material can be used at various fill and embankment construction areas at the discretion of the Engineer. All remaining excavation material not used on the project will become the property of the Contractor for their disposal. It is estimated that 5430 cubic yards of waste material will be remaining upon project completion. Compaction of the subgrade prior to the installation of the Reinforcement Fabric (MSE) shall be to the satisfaction of the Engineer.

TABLE OF UNCLASSIFIED EXCAVATION

Excavation	CuYd 5691
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AJUST MANHOLE

The Contractor will adjust the height of the manhole to be flush with the newly placed asphalt concrete pavement. Prior to bidding the project the Contractor will inspect the manhole to determine the extent of the work needed and determine if any additional materials will be needed. All equipment, labor and materials needed to adjust the manholes will be incidental to the contract unit price for ADJUST MANHOLE. Any additional materials needed to adjust the manhole will be approved by the Engineer prior to use.

DROP INLETS

The drop inlets will be covered throughout construction operations as necessary with an Engineer approved cover to provide safe travel for motorists and to prevent materials from entering the storm sewer system. After the permanent surfacing has been placed, the Contractor will seal the weep holes with grout and remove all debris from the drop inlet. All costs involved with the coverings, weep holes, and removing debris from the drop inlets will be incidental to the contract unit prices for the components of the drop inlets.

The plan shown quantities of the drop inlet components such as Class M6 Concrete, Reinforcing Steel, Type C Frame and Grate will be the basis of payment for these items.

If additions or reductions to the number of drop inlets are ordered by the Engineer, payment for the components required to construct the drop inlets will be made at the contract unit prices for the components of the drop inlets.

TABLE OF DROP INLETS AND QUANTITIES

Station	L / R	Drop Inlet Size	Drop Inlet Type	Class M6 Concrete (CuYd)	Reinf. Steel (Lb)	Frame and Grate/Lid Type
0+10	L	3'x4'	C	1.39	227	C
3+10	L	3'x4'	C	1.40	236	C
5+33.50	L	3'x4'	C	1.33	226	C
Totals:				4.12	689	

Total Type C Frame and Grate 3

WATER FOR COMPACTION OF GRANULAR MATERIALS

Cost of water for compaction of the granular material will be incidental to the contract unit price for the various contract items. Six percent, plus or minus, moisture will be required at the time of compaction unless otherwise directed by the Engineer.

ASPHALT CONCRETE COMPOSITE

The asphalt binder used in the mixture will be PG 64-28, PG 58-34 or PG 64-34 Asphalt Binder.

All other requirements in the Standard Specifications for Asphalt Concrete Composite will apply.

Asphalt for Tack, SS-1h or CSS-1h will be applied prior to each lift of Asphalt Concrete Composite. Asphalt for Tack will be applied at a rate of 0.09 gallons per square yard on existing pavement and a rate of 0.06 gallons per square yard on new asphalt concrete pavement.

FLUSH SEAL

Application of flush seal will be completed within 10 working days following completion of the asphalt concrete surfacing.

Tack or flush seal oil applied to concrete or buildings will be removed to the satisfaction of the Engineer at no cost to the State.

REINFORCEMENT FABRIC (MSE)

16677 square yards of Reinforcement Fabric (MSE) should be included in the materials quantities for bidding purposes. This quantity is assumed to cover approximately 14502 square yards. The bid quantity has been increased by 15% to account for overlaps.

The top of the subgrade will be prepared by smoothing the surface of the subgrade to minimize any ruts, ridges, and depressions. Any rocks or other protrusions that might damage the fabric will be removed. The fabric will be overlapped a minimum of 2 feet.

The fabric will be placed as taut as possible with minimal wrinkles. Placement will be done so that subsequent granular cover material does not shove, wrinkle or distort the in place fabric. The overlaps will be shingled in a manner that assures granular material will not be forced under the fabric during backfilling operations. The fabric may be held in place with small piles of granular material or staples. No traffic will be allowed on the uncovered fabric.

Granular material will be dumped at least 20 feet behind the leading edge of the backfill and pushed into place with a loader or dozer from the covered areas to the uncovered areas. The granular material will be compacted to 97% maximum dry density as determined by the Specified Density Method.

The fabric will conform to the specification for Geotextiles and Impermeable Plastic Membrane, Reinforcement Fabric (MSE) (Section 831 of the Specifications). The fabric will be on the Approved Products List for this material or will be certified by the supplier to meet this specification prior to installation.

Fabric will be paid for at the contract unit price per square yard for REINFORCEMENT FABRIC (MSE). Payment quantities will be based on the area covered plus 15%. Overlaps are accounted for the additional 15%. Payment will be full compensation for furnishing and installing the fabric only. Granular backfill materials will be paid for under separate bid items.

8" VALLEY GUTTER

The valley gutter will be built in accordance with Standard Plate 650.40. The specified width is 4'. The slope towards the center of the valley gutter will be 1%. The course aggregate used in the M6 concrete will be crushed ledge rock.

EROSION CONTROL WATTLE

Erosion control wattles for restraining the flow of runoff and sediment will be installed at locations determined by the Engineer during construction. Refer to Standard Plate 734.06 for details.

The Contractor will provide certification that the erosion control wattles do not contain noxious weeds.

The erosion control wattle provided will be from the approved product list. The approved product list for erosion control wattle may be viewed at the following internet site:

<http://sddot.com/business/certification/products/Default.aspx>

EROSION CONTROL

Erosion control will be completed at the disturbed locations where bank and channel protection gabions are installed. All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, seeding and mulching will be incidental to the contract lump sum price for EROSION CONTROL.

The limits of erosion control work will be determined by the Engineer during construction.

Mycorrhizal Inoculum

Mycorrhizal inoculum will consist of mycorrhizal fungi spores and mycorrhizal fungi-infected root fragments in a solid carrier. The carrier may include organic materials, calcinated clay, or other materials consistent with application and good plant growth. The supplier will provide certification of the fungal species claimed and the live propagule count. The inoculum will include the following fungal species:

- 25% *Glomus intraradices*
- 25% *Glomus aggregatum or deserticola*
- 25% *Glomus mosseae*
- 25% *Glomus etunicatum*

All seed will be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre. All costs of inoculating the seed will be incidental to the contract lump sum price for EROSION CONTROL.

The mycorrhizal inoculum will be as shown below or an approved equal:

<u>Product</u>	<u>Manufacturer</u>
MycoApply	Mycorrhizal Applications, Inc. Grants Pass, OR Phone: 1-866-476-7800 www.mycorrhizae.com

AM 120 Multi Species Blend

Reforestation Technologies Int.
Gilroy, CA
Phone: 1-800-784-4769
www.reforest.com

Permanent Seeding

Type B Permanent Seed Mixture will consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana, Walsh	7
Switchgrass	Dacotah, Forestburg, Nebraska 28, Pathfinder, Summer, Sunburst, Trailblazer	3
Indiangrass	Holt, Tomahawk, Chief, Nebraska 54	3
Big Bluestem	Bison, Bonilla, Champ, Sunnyview, Rountree, Bonanza	3
Canada Wildrye	Mandan	2
Total:		18

Mulching (Grass Hay or Straw)

Grass Hay or Straw Mulch will be used as temporary erosion control on areas determined by the Engineer during construction.

REMOVE AND RESET CHAIN LINK FENCE

The Contractor will remove chain link fence to allow for the installation of the storm sewer pipe and bank and channel protection gabions. Posts and post footings shall remain in place and care will be taken to prevent damage during construction activities. Any damage to posts or post footings will be replaced by the Contractor at no cost to the State.

HORIZONTAL ALIGNMENT DATA AND CONTROL DATA

STORM SEWER

<u>Type</u>	<u>Station</u>		<u>Northing</u>	<u>Easting</u>
POB	0+00.00		558752.520	2599281.751
		TL= 237.00 N 89°53'08" E		
POE	2+37.00		558752.993	2599518.750
POB	3+00.00		558742.973	2599508.770
		TL= 235.00 N 00°06'52" W		
PI	5+35.00		558977.973	2599508.301
		TL= 125.36 N 17°54'02" E		
POE	6+60.36		559097.260	2599546.831

CURB AND GUTTER

<u>Type</u>	<u>Station</u>		<u>Northing</u>	<u>Easting</u>
POB	0+00.00		558584.252	2599119.208
		TL= 480.00 N 06°22'40" W		
POE	4+80.00		559061.282	2599065.889

CONTROL DATA

HORIZONTAL AND VERTICAL CONTROL POINTS						
POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
109	4+33	263' R	REFMRK	559044.291	2599332.917	1863.95
110	4+06	484' R	REFMRK	559041.230	2599555.321	1862.41
111			REFMRK	558602.778	2599472.918	1864.35
112	0+08	11' R	REFMRK	558593.312	2599129.158	1864.22
113	11+53	11' R	REFMRK	559035.699	2599079.711	1863.27

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GENERAL LAYOUT

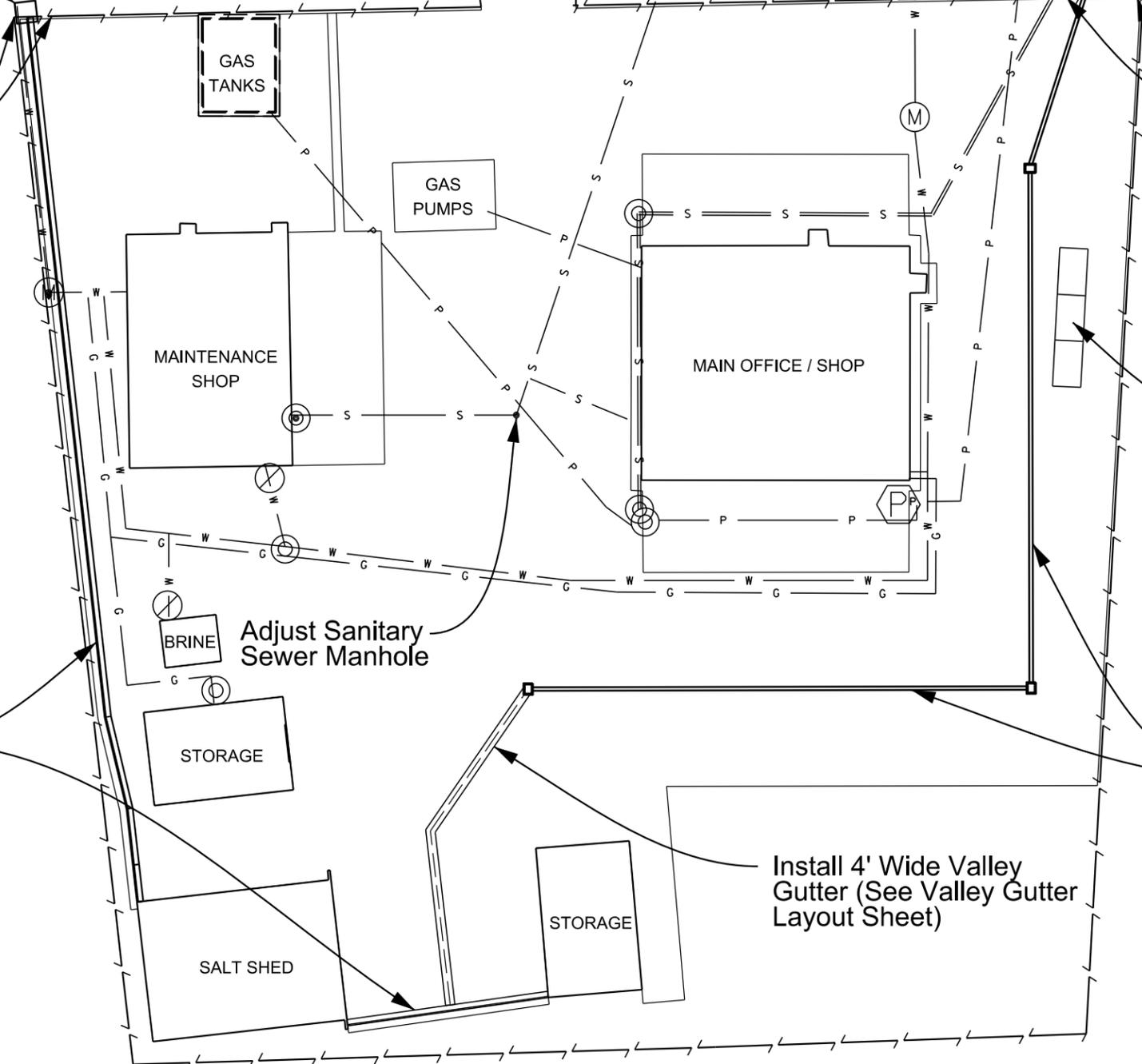
US HWY 12E

Install Bank & Channel Gabions
(9' L x 9' W x 1.5' D)

Remove & Reset
10' Chain Link Fence

Install Bank & Channel Gabions
(9' L x 9' W x 1.5' D)

Remove & Reset
30' Chain Link Fence



In Place Salt Rack

Install Type B66 Concrete
Curb & Gutter (See Curb
& Gutter Layout Sheet)

Install Storm Sewer
(See Storm Sewer
Layout Sheets)

Install 4' Wide Valley
Gutter (See Valley Gutter
Layout Sheet)

PLOT SCALE - 1:160

PLOTTED FROM - TRAB18004

PLOT NAME - 1

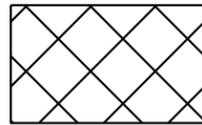
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SURFACING LAYOUT

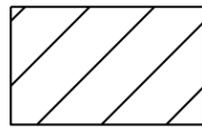
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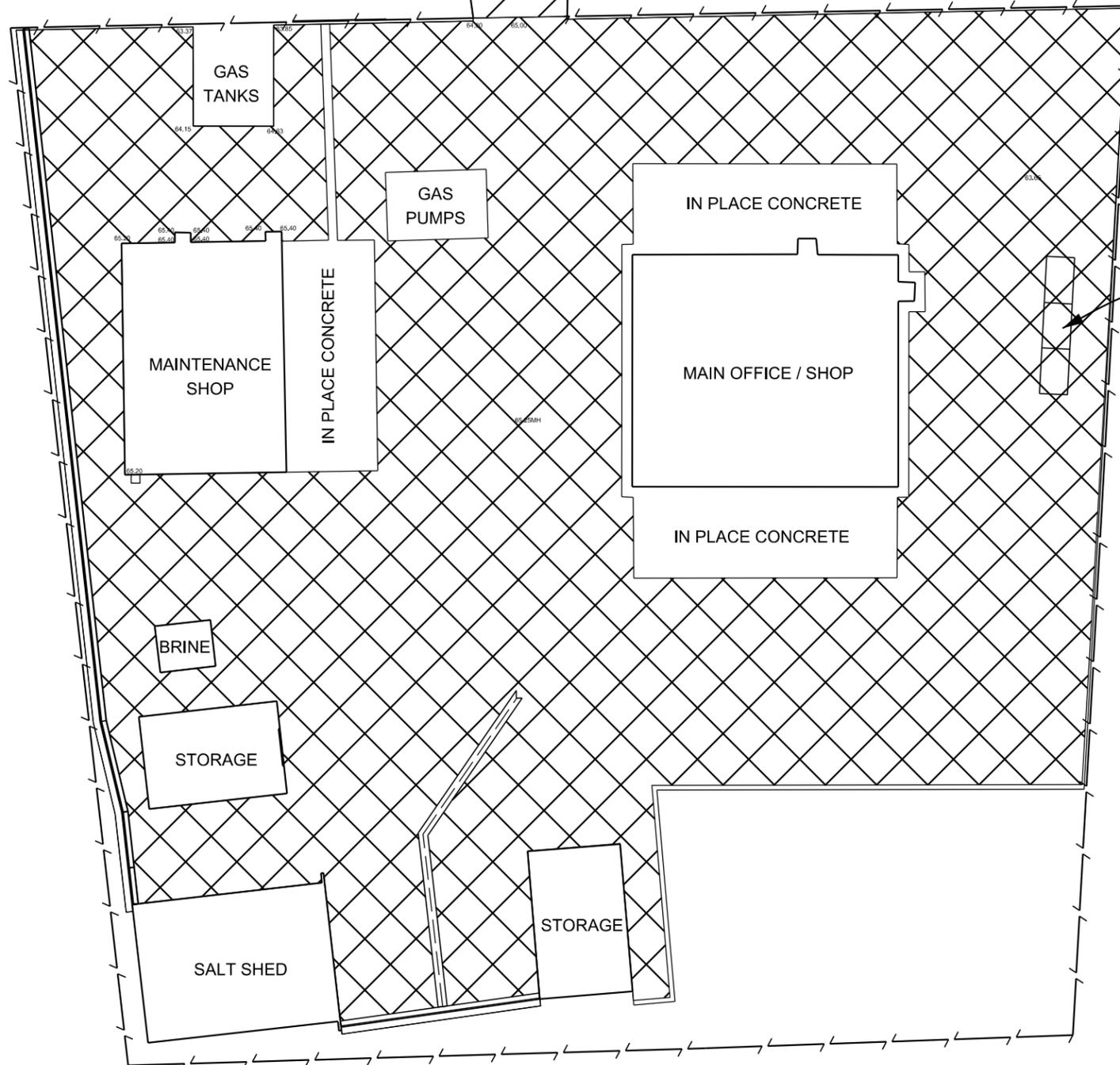
US HWY 12E



Regrade, place Reinforcement Fabric (MSE),
12" Base Course and 2 - 2" lifts of Asphalt
Concrete Composite.



Resurface with 2" lift of Asphalt
Concrete Composite.



IN PLACE
SALT RACK

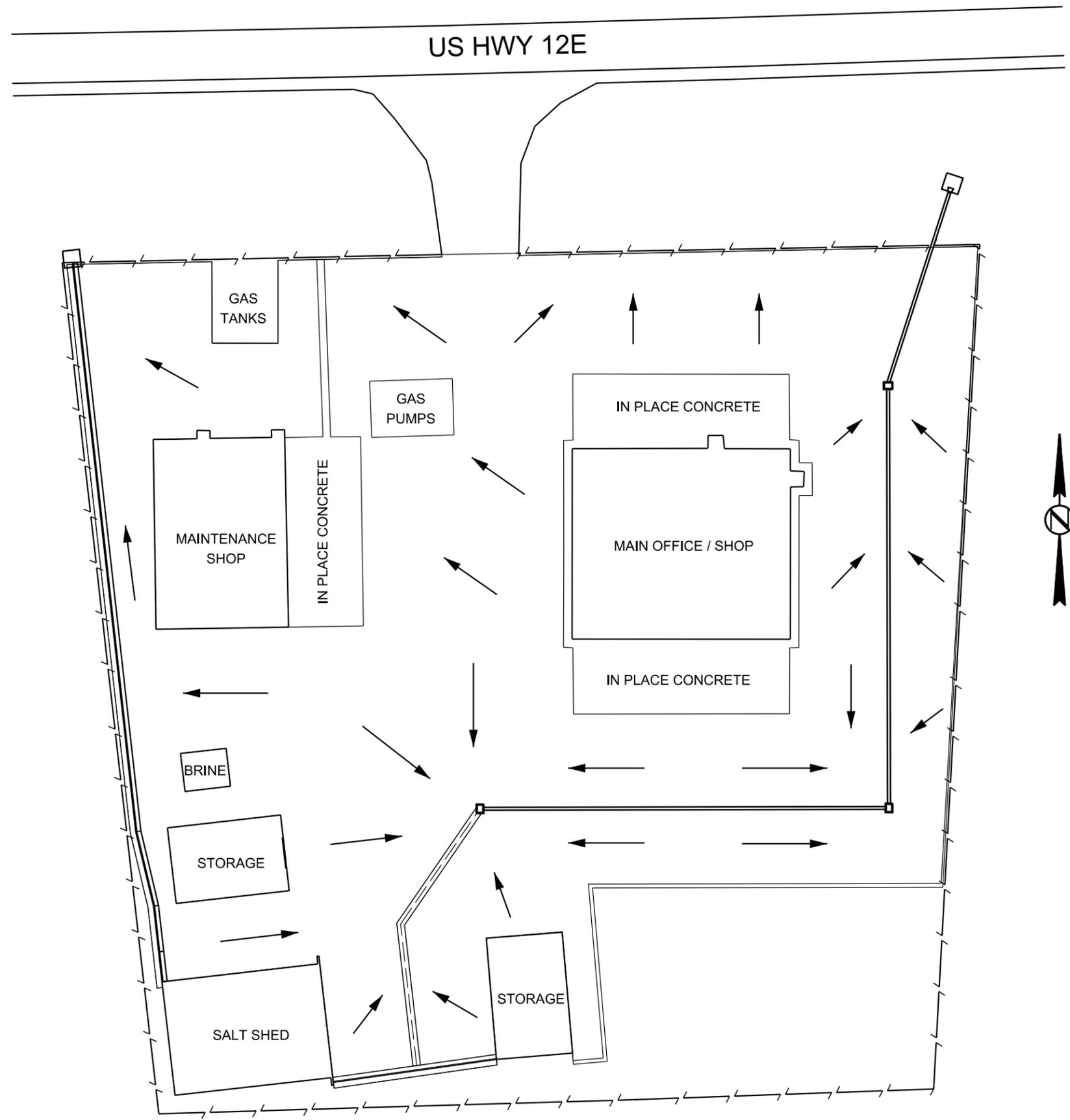


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DRAINAGE DETAIL

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PLOT SCALE - 1:60

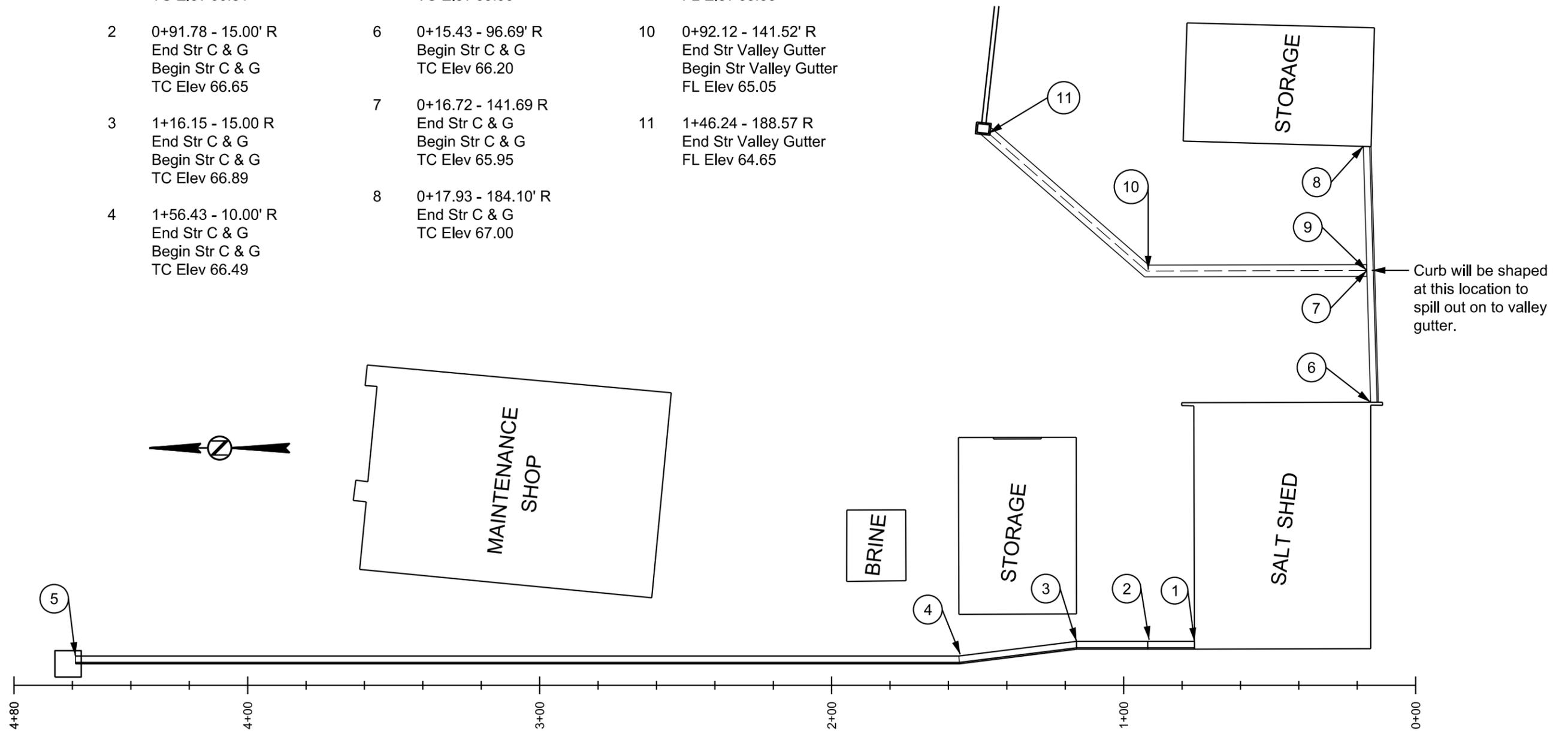
PLOT NAME - 1

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CURB AND GUTTER & VALLEY GUTTER LAYOUT

- | | | | | | |
|---|---|---|---|----|--|
| 1 | 0+75.77 - 15.00' R
Begin Str C & G
TC Elev 66.81 | 5 | 4+58.98 - 10.00' R
End Str C & G
TC Elev 63.50 | 9 | 0+16.72 - 141.69' R
Begin Str Valley Gutter
FL Elev 65.55 |
| 2 | 0+91.78 - 15.00' R
End Str C & G
Begin Str C & G
TC Elev 66.65 | 6 | 0+15.43 - 96.69' R
Begin Str C & G
TC Elev 66.20 | 10 | 0+92.12 - 141.52' R
End Str Valley Gutter
Begin Str Valley Gutter
FL Elev 65.05 |
| 3 | 1+16.15 - 15.00 R
End Str C & G
Begin Str C & G
TC Elev 66.89 | 7 | 0+16.72 - 141.69 R
End Str C & G
Begin Str C & G
TC Elev 65.95 | 11 | 1+46.24 - 188.57 R
End Str Valley Gutter
FL Elev 64.65 |
| 4 | 1+56.43 - 10.00' R
End Str C & G
Begin Str C & G
TC Elev 66.49 | 8 | 0+17.93 - 184.10' R
End Str C & G
TC Elev 67.00 | | |



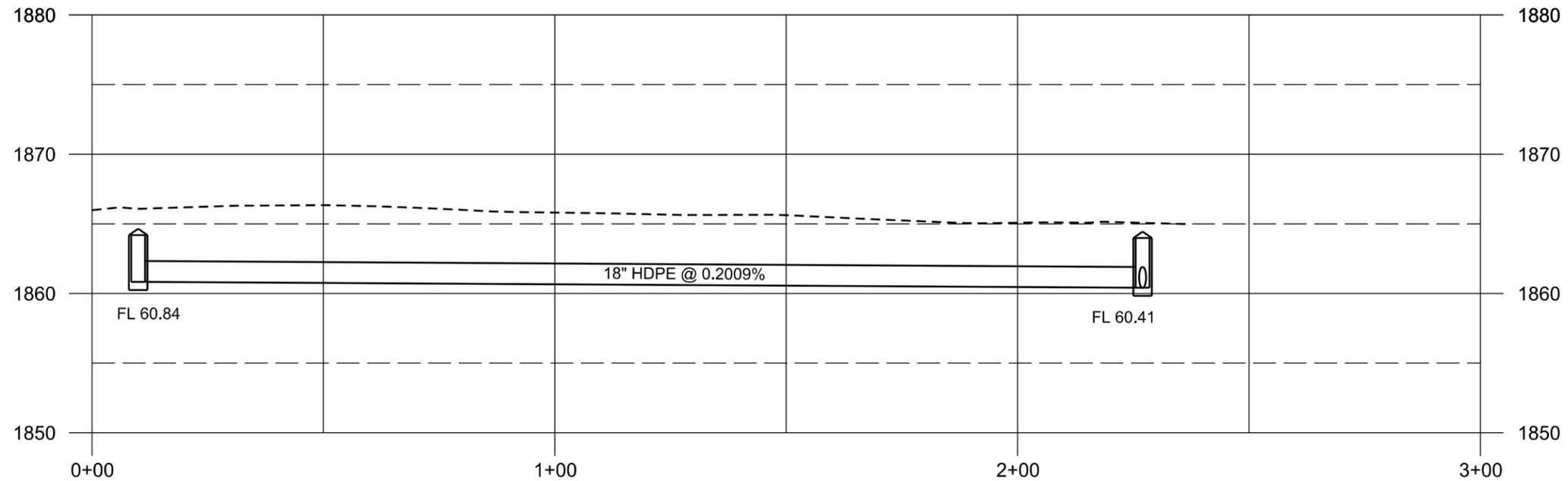
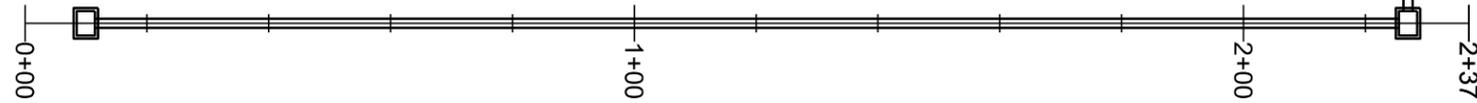
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STORM SEWER LAYOUT

0+10 - 0.0' R
Install 3' x 4' Type C Drop Inlet
with Type C Frame & Grate
Rim EI = 64.65
Top Wall EI = 64.19
Floor EI = 60.84

0+10 - 0' R to 2+27 - 0'R
Install 18" - 214' HDPE Pipe
(Between Drop Inlets)

2+27 - 0'R
(3+10 - 0.0' R AH)
Install 3' x 4' Type C Drop Inlet
with Type C Frame & Grate
Rim EI = 64.45
Top Wall EI = 63.99
Floor EI = 60.41



PLOT SCALE - 1"=30'

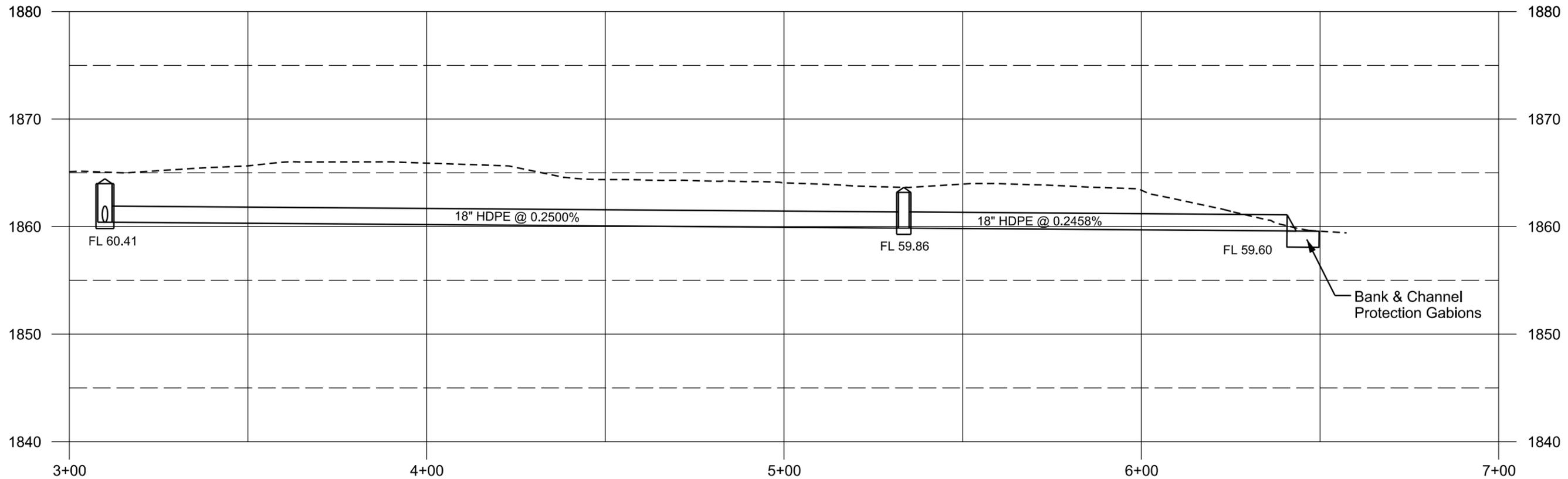
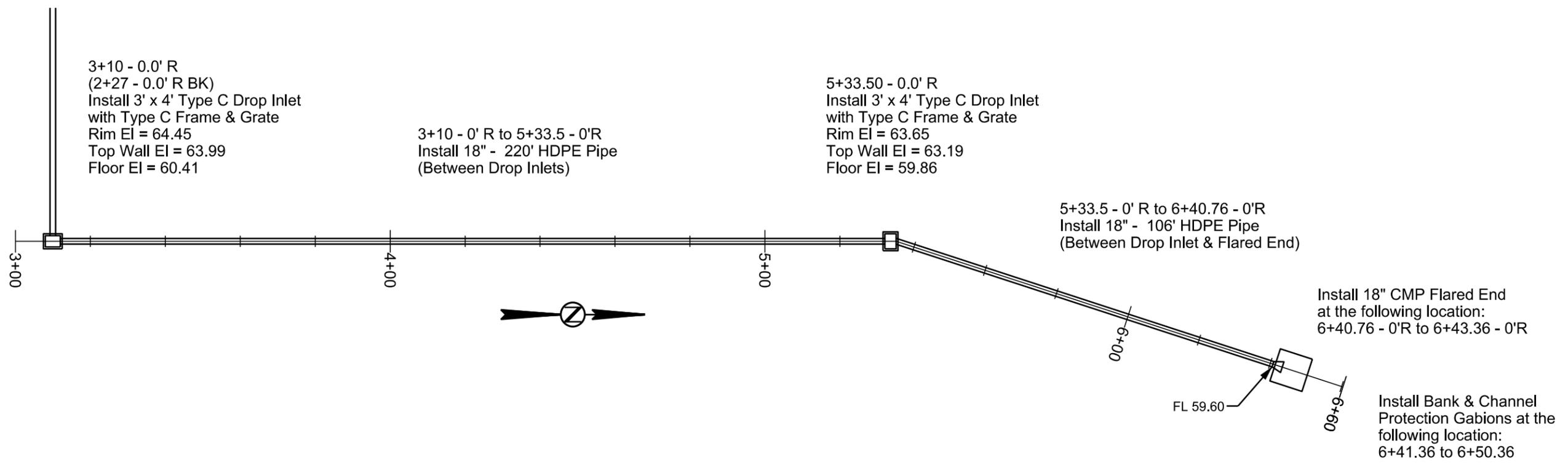
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PLOT NAME - 1

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STORM SEWER LAYOUT

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PLOT SCALE - 1"=30'

PLOT NAME - 1

FILE - ... \AREA DESIGN\STORMS.DGN

PLOTTED FROM - TRAB18004

Alternate Type Connector Sections may be used with approval of the Engineer.

PLAN

ELEVATION

Dia. D (in.)	Ga.	DIMENSIONS (in.)						Approx. Slope	Body
		A	B	H	L	W			
12	16	6	6	6	21	24	2 1/2:1	1 Pc.	
15	16	7	8	6	26	30	2 1/2:1	1 Pc.	
18	16	8	10	6	31	36	2 1/2:1	1 Pc.	
21	16	9	12	6	36	42	2 1/2:1	1 Pc.	
24	16	10	13	6	41	48	2 1/2:1	1 Pc.	
30	14	12	16	8	46	60	2 1/2:1	1 Pc.	
36	14	14	19	9	51	72	2 1/2:1	2 Pc.	
42	12	16	22	11	60	84	2 1/2:1	2 Pc.	
48	12	18	27	12	69	90	2 1/4:1	2 Pc.	
54	12	18	30	12	78	102	2:1	3 Pc.	
60	12	18	33	12	84	114	1 3/4:1	3 Pc.	
66	12	18	36	12	87	120	1 1/2:1	3 Pc.	
72	12	18	39	12	87	126	1 1/3:1	3 Pc.	
78	12	18	42	12	87	132	1 1/4:1	3 Pc.	
84	12	18	45	12	87	138	1 1/6:1	3 Pc.	

STANDARD CONNECTIONS

Threaded 5/8" Dia. Rod over Top of culvert

Dimple Band Collar bolted to end section with 3/8" bolts

Bolted on Side Lug

For 30" through 84"

Alternate for all sizes

NOTE: Tubing is slipped over the sheet and rivets or lugs prior to forming operations of the apron.

1" O.D. 14 Ga. Galv. Tubing

Sheet

3/8" x 1/2" Gal. Buttonhead Rivets spaced 6" C. to C. Overall length of rivets=0.78"

TUBING ATTACHMENT DETAILS SECTION A-A

Finish Earth Slope as Required

Approx. 2 1/2:1 Slope

Flow Line

Standard Coupling Band

TYPICAL CROSS-SECTION

SECTION A-A (alternate)

Half Punches (Lugs)

1/2" I.D. (Metal Edge)

For 12" through 24" only

GENERAL NOTES:

All 3 pc. bodies shall have 12 Ga. sides and 10 Ga. center panels. Width of center panels shall be greater than 20% of the pipe periphery. Multiple panel bodies to have lap seams tightly joined by 3/8" Dia. galvanized rivets or bolts.

For 60" through 84" sizes, reinforced edges shall be supplemented with galvanized stiffener angles. The angles will be 2" x 2" x 1/4" for 60" through 72" diameters and 2 1/2" x 2 1/2" x 1/4" for 78" and 84" diameters. The angles shall be attached by 3/8" diameter galvanized nuts and bolts.

Rivets and Bolts shall be 3/8" Dia. Min. for 10 Ga. and 12 Ga. sheet, and 5/16" Dia. Min. for 14 Ga. and 16 Ga. sheets. Tighten nuts with torque wrench to 25 lbs. torque.

March 31, 2000

SD DOT

C.M.P. FLARED ENDS

PLATE NUMBER 450.35

Published Date: 2nd Qtr. 2021

Sheet 1 of 1

6" 2" 24" 22" 6 3/8" 6" 3" R. 5% Slope 2% Slope 32" T1 T2

The stated radii on the plans and cross sections refer to this line and it will also be the basis for horizontal linear foot measurement and payment.

1/4" to 1/2" Radius (Typ.)

TYPE B CONCRETE CURB AND GUTTER				
Type	T ₁ (Inches)	T ₂ (Inches)	Cu. Yd. Per Lin. Ft.	Lin. Ft. Per Cu. Yd.
B66	6	5 1/16	0.057	17.7
B67	7	6 1/16	0.065	15.4
B68	8	7 1/16	0.073	13.7
B68.5	8.5	7 9/16	0.077	13.0
B69	9	8 1/16	0.081	12.3
B69.5	9.5	8 9/16	0.085	11.7
B610	10	9 1/16	0.090	11.2
B610.5	10.5	9 9/16	0.094	10.7
B611	11	10 1/16	0.098	10.2
B611.5	11.5	10 9/16	0.102	9.8
B612	12	11 1/16	0.106	9.4

GENERAL NOTES:

When concrete curb and gutter longitudinally adjoins new concrete pavement, the method of attachment will be by one of the methods shown on standard plate 380.11.

See standard plate 650.90 for expansion and contraction joints in the curb and gutter.

December 23, 2019

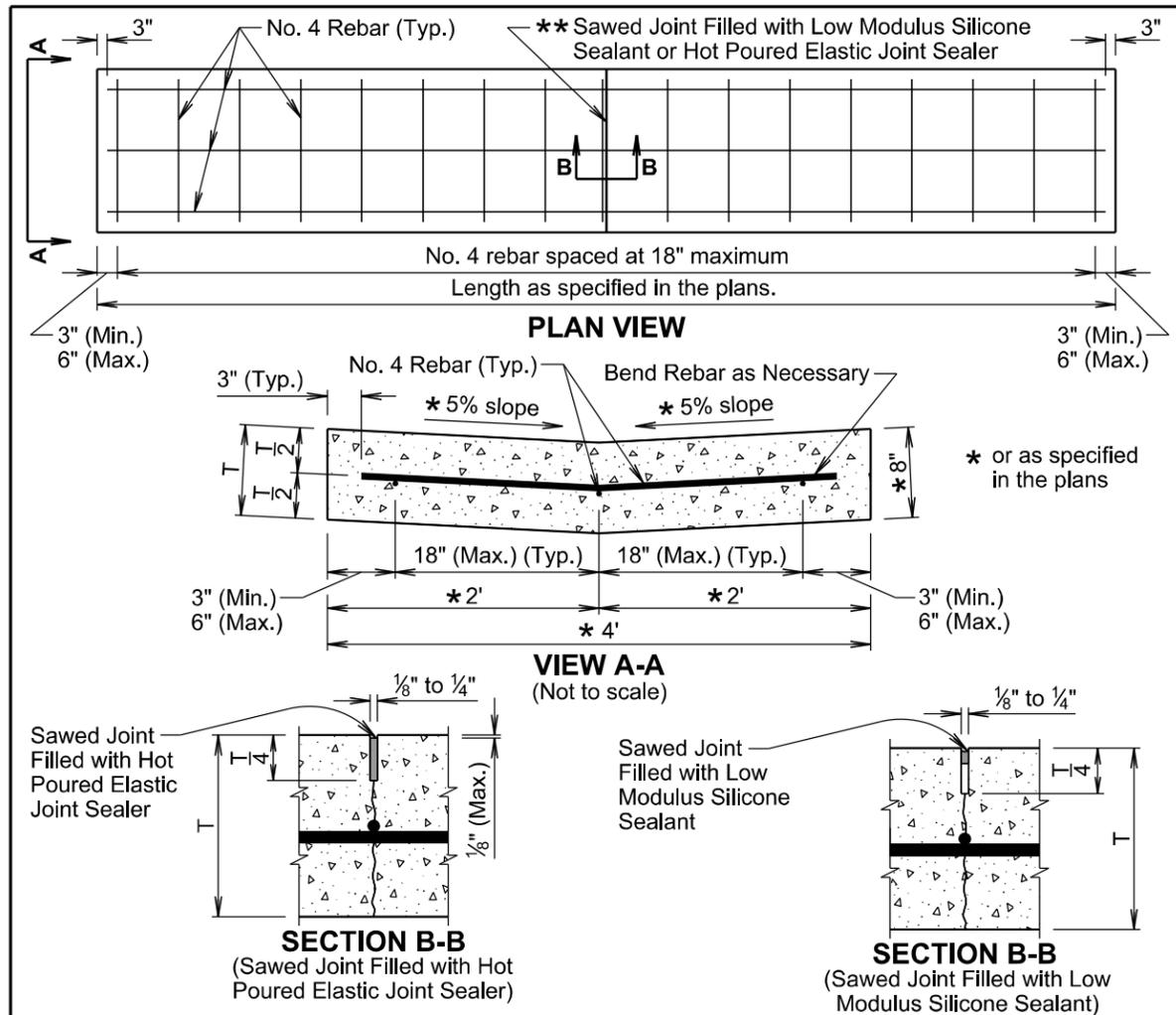
SD DOT

TYPE B CONCRETE CURB AND GUTTER

PLATE NUMBER 650.01

Published Date: 2nd Qtr. 2021

Sheet 1 of 1

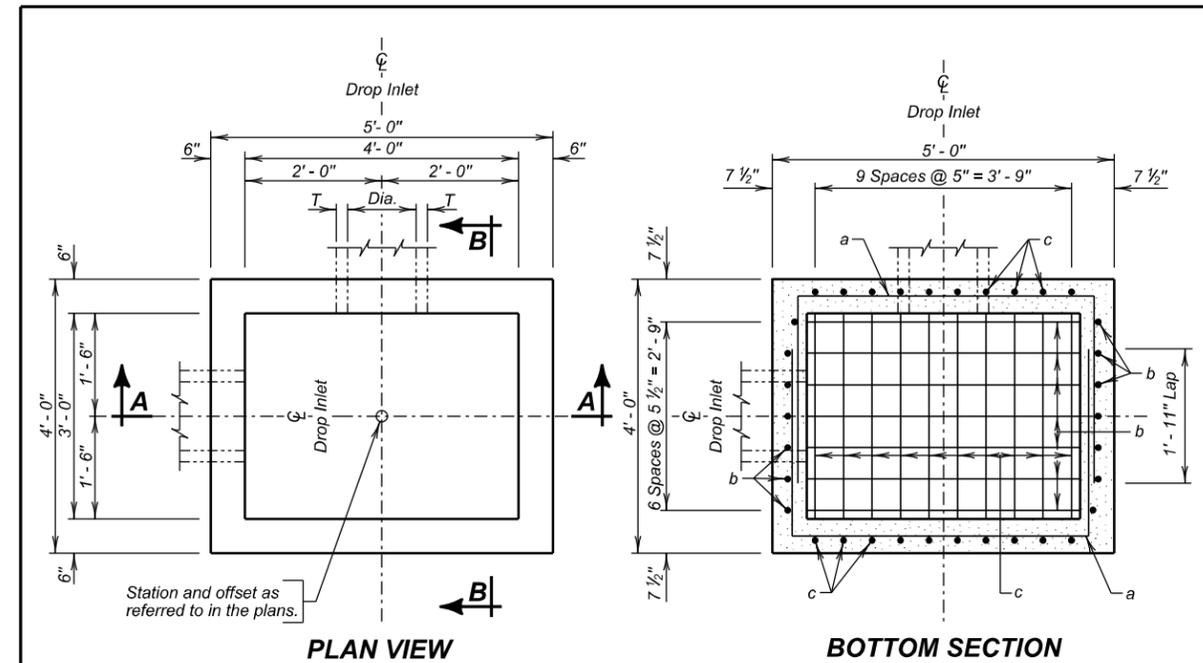


GENERAL NOTES:

- The concrete will comply with the specifications for class M6 concrete.
- The reinforcing steel will comply with the requirements of specification sections 480 and 1010.
- If a lap splice is provided the No. 4 rebar will be lapped a minimum of 12 inches.
- ** The sawed joints will be spaced at 12 feet; however, when the length of the valley gutter is 12 feet to 24 feet there will be a joint at the midpoint of the length. The saw cut to control cracking will be a minimum of 1/4 the thickness of the pavement.
- All hot poured elastic joint sealer material spilled on the surface of the concrete pavement will be removed as soon as the material has cooled. The extent of removal of material will be to the satisfaction of the Engineer. All costs for removal of the spilled joint sealer material will be borne by the Contractor.
- The silicone sealant will be bonded to the sides of a clean joint to completely seal the joint as approved by the Engineer.
- All costs for furnishing and installing the valley gutter including materials, equipment, labor, and incidentals will be included in the contract unit price per square yard for the corresponding Valley Gutter contract item.

December 23, 2019

Published Date: 2nd Qtr. 2021	S D D O T	VALLEY GUTTER	PLATE NUMBER 650.40
			Sheet 1 of 1



ESTIMATED QUANTITIES			
ITEM	UNIT	CONSTANT QUANTITY	VARIABLE QUANTITY
* Class M6 Concrete	Cu. Yd.	0.43	0.30H
Reinforcing Steel	Lb.	90.90	40.53H
Frame and Grate Assembly	Each	1	

DROP INLETS FOR 12" TO 36" DIAMETER PIPE

SPECIFICATIONS

Design Specifications: AASHTO LRFD Bridge Design Specifications, 2012 Edition.
Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, Current Edition and required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

GENERAL NOTES:

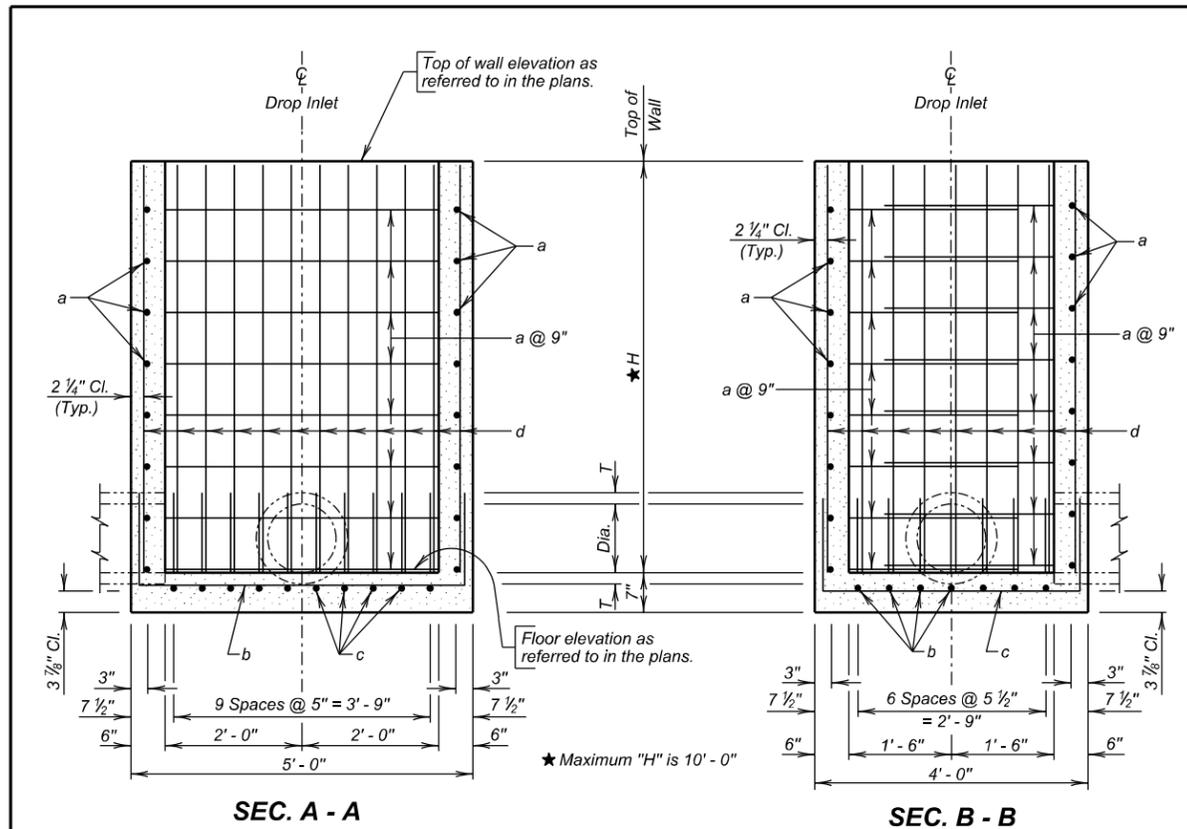
- Design Live Load: HL-93. No construction loading in excess of legal load was considered.
- Reinforcing steel shall conform to ASTM A615 grade 60. The d bars shall be lapped 12 inches with the b and c bars. Cut and bend reinforcing steel as required to place pipe(s) through the drop inlet wall.
- Drop inlet may be precast. If precast drop inlet details differ from this standard plate, submit a checked design done by a SD registered P.E. and shop plans to the Office of Bridge Design for approval.
- * Reduce total quantities of concrete by the amount of concrete displaced by the pipe(s). The total quantity of concrete shall be computed to the nearest hundredth of a cubic yard. The total quantity of reinforcing steel shall be computed to the nearest pound.
- Drop inlet shown may be modified by the addition or omission of connecting pipes as noted elsewhere in the plans. All pipes entering drop inlet must fit between the inside face of walls and shall not enter through the corners.
- Maximum R.C.P. diameter shall not exceed 24 inches (24 inches for R. C. arch) on the 3-foot wide side and shall not exceed 36 inches (30 inches for R. C. arch) on the 4-foot wide side of the drop inlet.
- The dimension of H is in feet. Maximum H is 10 feet.

PIPE DISPLACEMENT REDUCTIONS

	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	12	2	0.03
	15	2 1/4	0.04
	18	2 1/2	0.05
	24	3	0.09
	30	3 1/2	0.14
R.C. ARCH	36	4	0.20
	18	2 1/2	0.05
	24	3 1/2	0.09
	30	4	0.14

December 16, 2015

Published Date: 2nd Qtr. 2021	S D D O T	3' X 4' TYPE C REINFORCED CONCRETE DROP INLET	PLATE NUMBER 670.10
			Sheet 1 of 2



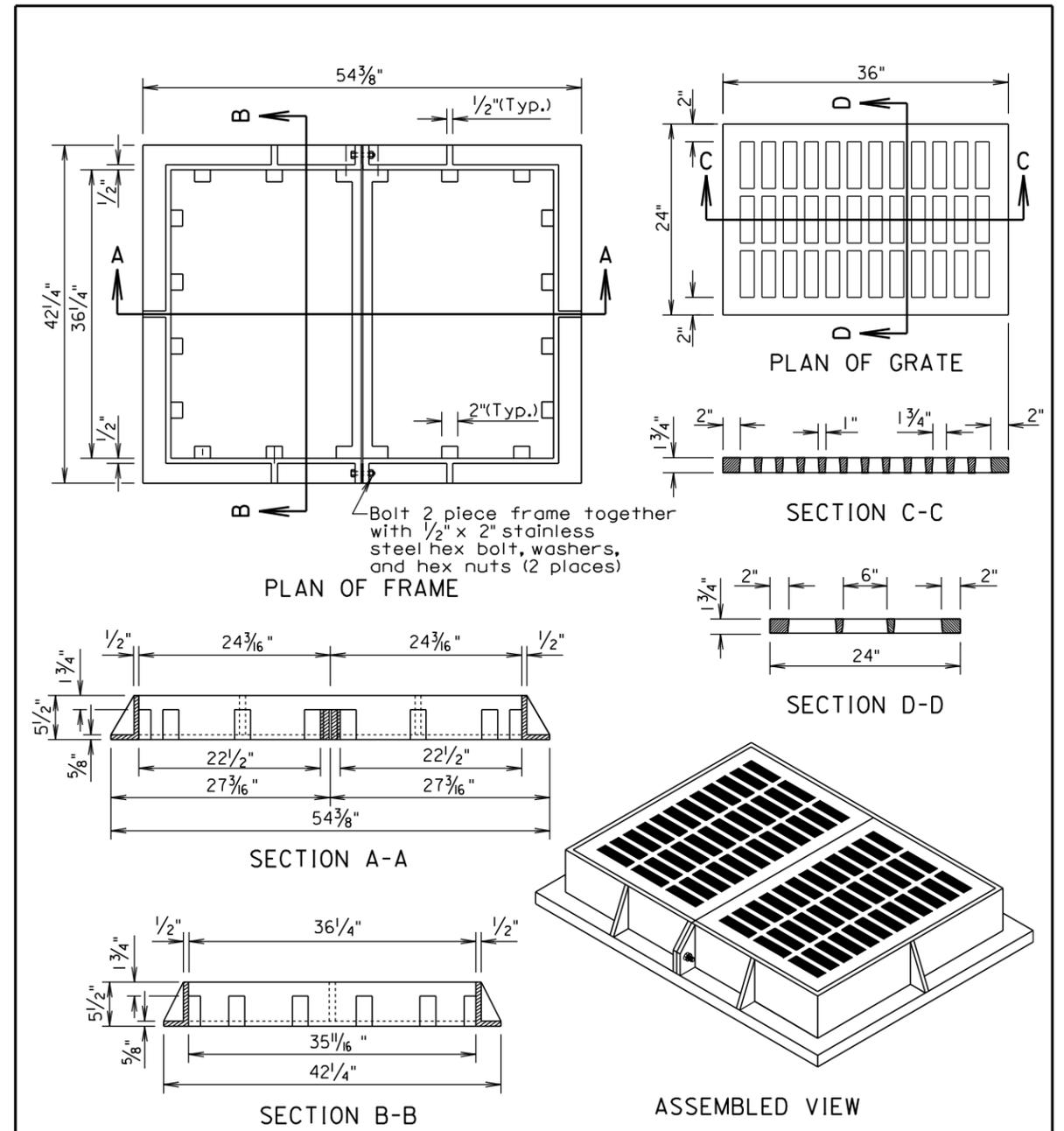
REINFORCING SCHEDULE					
Mk.	No.	Size	Length	Type	Bending Details
a	2.67H	4	10'-0"	17	
b	7	5	7'-3"	17	
c	10	4	6'-3"	17	
d	34	4	H-2"	Str.	

NOTE:
All dimensions are out to out of bars.

a 2'-8 3/4"
b 1'-4 1/2"
c 1'-4 1/2"
Type 17

December 16, 2015

Published Date: 2nd Qtr. 2021	S D D O T	3' X 4' TYPE C REINFORCED CONCRETE DROP INLET	PLATE NUMBER 670.10
			Sheet 2 of 2

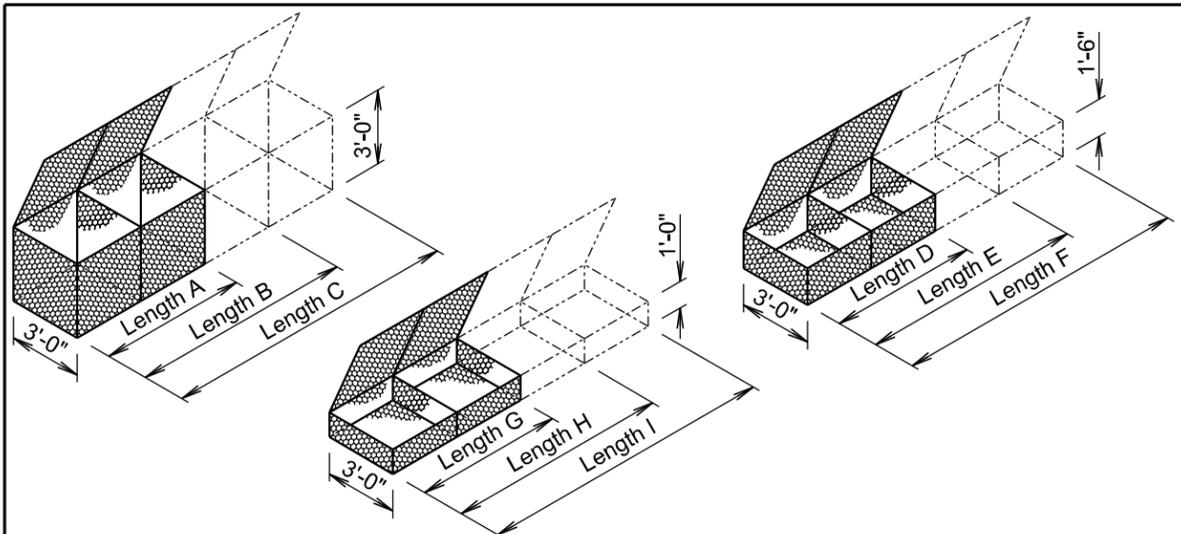


GENERAL NOTE:
The total weight of the frame and grate shall be 850 pounds minimum.

March 31, 2000

Published Date: 2nd Qtr. 2021	S D D O T	TYPE C FRAME AND GRATE	PLATE NUMBER 670.82
			Sheet 1 of 1

Username - trabi8004



GABION DETAILS

STANDARD SIZES					
SIZE	LENGTH	WIDTH	HEIGHT	NUMBER OF CELLS	CAPACITY (Cu. Yd.)
A	6'-0"	3'-0"	3'-0"	2	2.0
B	9'-0"	3'-0"	3'-0"	3	3.0
C	12'-0"	3'-0"	3'-0"	4	4.0
D	6'-0"	3'-0"	1'-6"	2	1.0
E	9'-0"	3'-0"	1'-6"	3	1.5
F	12'-0"	3'-0"	1'-6"	4	2.0
G	6'-0"	3'-0"	1'-0"	2	0.7
H	9'-0"	3'-0"	1'-0"	3	1.0
I	12'-0"	3'-0"	1'-0"	4	1.3

GENERAL NOTES:

Above dimensions subject to mill tolerances.

Lacing and internal connecting wire will be 0.0866 inch diameter steel wire ASTM A641, Class 3 soft temper measured after galvanizing and for PVC coated gabions will be 0.0866 inch diameter steel wire measured after galvanizing but before PVC coating.

The lacing procedure is as follows:

1. Cut a length of lacing wire approximately 1½ times the distance to be laced but not exceeding 5 feet.
2. Secure the wire terminal at the corner by looping and twisting.
3. Proceed lacing with alternating single and double loops at a spacing not to exceed 6 inches.
4. Securely fasten the other lacing wire terminal.

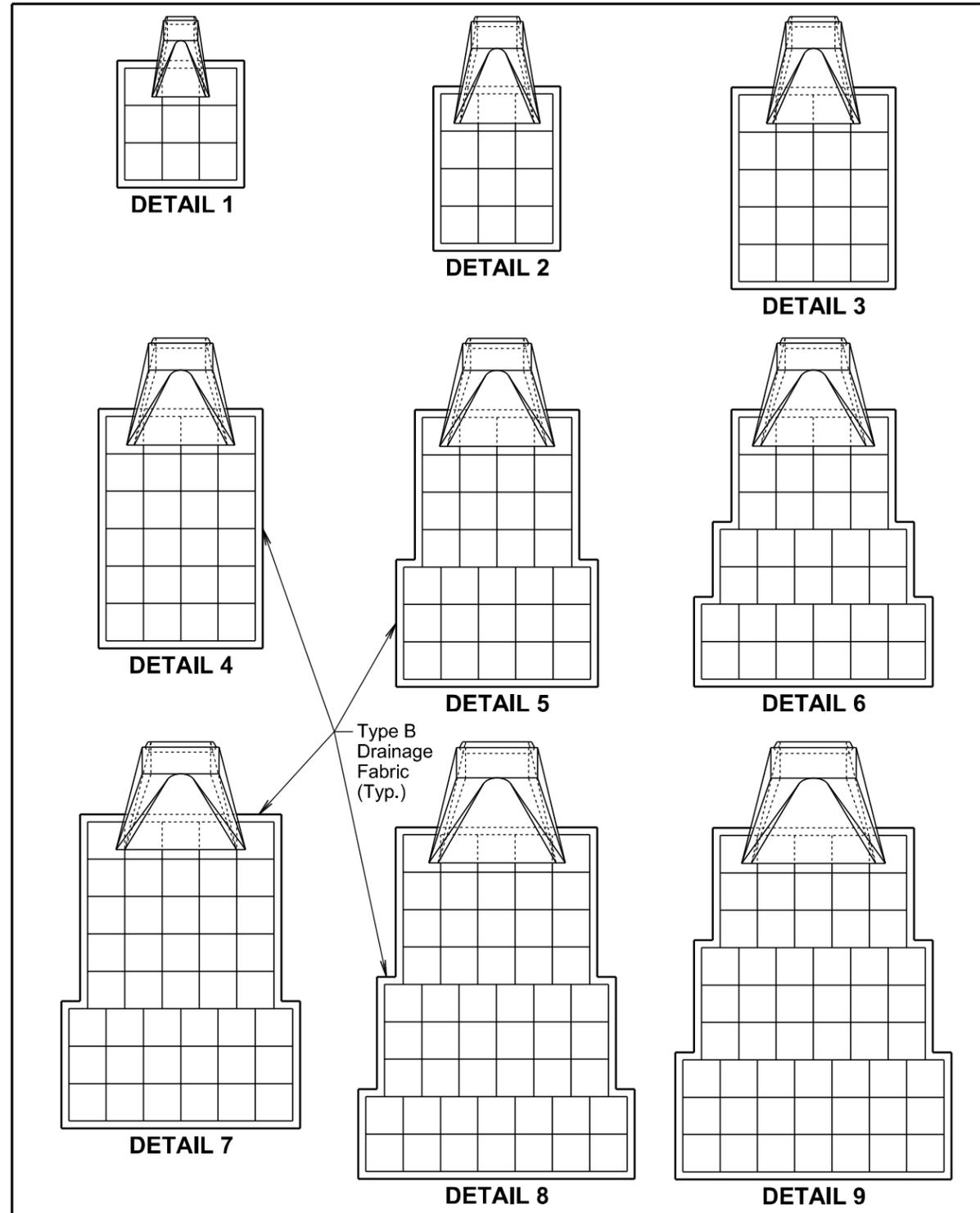
Wire lacing or interlocking type fasteners will be used for gabion assembly and final construction of gabion structures. Interlocking fasteners for galvanized gabions will be high tensile 0.120 inch diameter galvanized steel wire measured after galvanizing. The galvanizing will conform to ASTM A641-92, Class 3 coating. Fasteners will also be in accordance with ASTM A764, Class II, Type III.

Interlocking fasteners for PVC coated gabions will be high tensile 0.120 inch diameter stainless steel wire conforming to ASTM A313, Type 302, Class 1. The spacing of the interlocking fasteners during all phases of assembly and construction will not exceed 6 inches.

All fasteners will be placed where the mesh weaves around the selvage wire at the vertical and horizontal joints.

February 14, 2020

Published Date: 2nd Qtr. 2021	S D D O T	BANK AND CHANNEL PROTECTION GABIONS	PLATE NUMBER 720.01
			Sheet 1 of 1



February 14, 2020

Published Date: 2nd Qtr. 2021	S D D O T	BANK AND CHANNEL PROTECTION GABION PLACEMENT UNDER PIPE END SECTIONS	PLATE NUMBER 720.03
			Sheet 1 of 2

* ESTIMATED QUANTITIES				
Detail	Pipe Diameter (Inches)	Gabion (Cu. Yd.)	Type B Drainage Fabric (Sq. Yd.)	
RCP, RCP Arch, CMP, and CMP Arch	1	12, 18, and 24	4.5	15
	2	30 and 36	6.0	19
	3	42	10.0	29
	4	48 and 54	12.0	34
	5	60	15.5	43
	6	66	17.0	47
	7	72	21.5	57
	8	78	26.0	68
	9	84	27.0	70

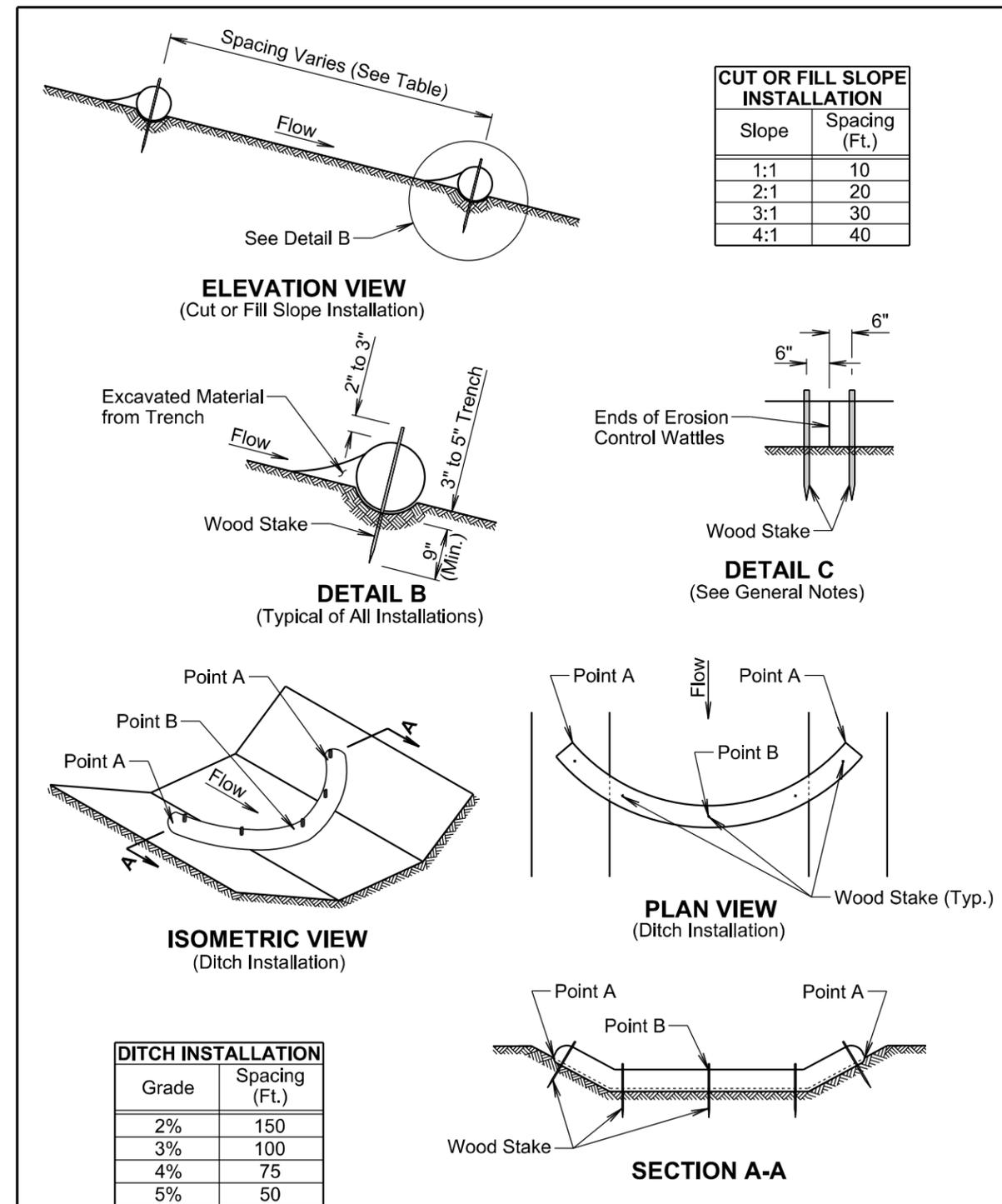
GENERAL NOTES:

Gabions at outlets of CMP and RCP will be placed under the end section a distance of 2 feet from the outlet end. For CMP end section installations, the upper fabric of the gabions will be modified to accommodate the metal end section as approved by the Engineer.

* Gabion and type B drainage fabric quantities on this standard plate are based on standard gabion sizes D, E, and F as depicted on standard plate 720.01.

Type B drainage fabric will be placed under the gabions and around the exterior sides (perimeter) of the gabions as approved by the Engineer. The type B drainage fabric will be in conformance with Section 831 of the Specifications. Measurement and payment of the type B drainage fabric will be in conformance with Section 720 of the Specifications.

February 14, 2020



February 14, 2020

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	0009-151	18	18
Plotting Date: 05/05/2021			

GENERAL NOTES:

At cut or fill slope installations, wattles will be installed along the contour and perpendicular to the water flow.

At ditch installations, point A must be higher than point B to ensure that water flows over the wattle and not around the ends.

The Contractor will dig a 3" to 5" trench, install the wattle tightly in the trench so that daylight can not be seen under the wattle, and then compact the soil excavated from the trench against the wattle on the uphill side. See Detail B.

The stakes will be 1"x2" or 2"x2" wood stakes, however, other types of stakes such as rebar may be used only if approved by the Engineer. The stakes will be placed 6" from the ends of the wattles and the spacing of the stakes along the wattles will be 3' to 4'.

Where installing running lengths of wattles, the Contractor will butt the second wattle tightly against the first and will not overlap the ends. See Detail C.

The Contractor and Engineer will inspect the erosion control wattles in accordance with the storm water permit. The Contractor will remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

Sediment removal, disposal, or necessary shaping will be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping will be incidental to the contract unit price per cubic yard for "Remove Sediment".

All costs for furnishing and installing the erosion control wattles including labor, equipment, and materials will be incidental to the contract unit price per foot for the corresponding erosion control wattle contract item.

All costs for removing the erosion control wattle from the project including labor, equipment, and materials will be incidental to the contract unit price per foot for "Remove Erosion Control Wattle".

February 14, 2020

<i>Published Date: 2nd Qtr. 2021</i>	S D D O T	EROSION CONTROL WATTLE	<i>PLATE NUMBER</i> 734.06
			<i>Sheet 2 of 2</i>